ABSTRACT

Purpose of the study: The study examined the wear resistance of Titanium and Zirconia abutment at the implant – abutment interface after force transmission through cyclic loading simulating 4 months of intra oral function.

Materials and methods: One implant with standard platform was connected to ten Titanium abutments (Group I) and one implant with standard platform was connected to ten Zirconia abutments Group II) which were positioned on the fibre reinforced epoxy resin block. The final torque of the implant was 45 N/cm. The abutments were connected and torqued to 25N/cm. The samples were cyclic loaded at 200 N at frequency of 2Hz for 1,80,000 cycles to simulate 4 months of intra oral function. The samples underwent SEM analysis before and after cyclic loading. The post cyclic loaded samples underwent EDAX to examine the suspended particles. The results were statistically analyzed using 't' test and Levene's test.

Results: The wear resistance of the post cyclic loaded Group I **(2.22%)** were higher than the Group II **(12.01%)** at the implant- abutment interface and was statistically significant. The EDAX revealed the suspended particles at the implant-abutment interface was higher for Group II **(62.42%)** than Group I **(8.36%)** and was statistically significant.

Conclusion: Wear at the implant abutment - interface was higher for Zirconia abutments compared to Titanium abutments. Dispersion of particles was higher in Zirconia abutments at the implant-abutment interface than Titanium abutments.

KEY WORDS: titanium abutment, zirconia abutment, cyclic loading, wear resistance.